TSSS

Highway Safety Improvement Program Group

Highway Safety Improvement Program Group

Outline:

- Purpose
- Network Screening and Prioritization
- HSIP Crash Analysis
- Examples of 2005 HSIP Locations

Highway Safety Improvement Program Group

Purpose:

- Initiated in 1966 to reduce the number and severity of crashes, and to reduce the potential for crashes on all highways
- Provide a systematic procedure that identifies, reviews and addresses traffic safety concerns throughout the state.

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Mandate:

- SAFETEA-LU established the Highway Safety Improvement Program (HSIP) as an FHWA "core" program and provided a significant increase in the funding available for highway safety improvement projects. This program is established as section 148 of Title 23, United States Code.
- States should carefully analyze crash data to identify highway safety problems and safety improvement opportunities for all public roads.
- States are required to submit report describing not less than 5 percent of their highway locations exhibiting the most severe safety needs.

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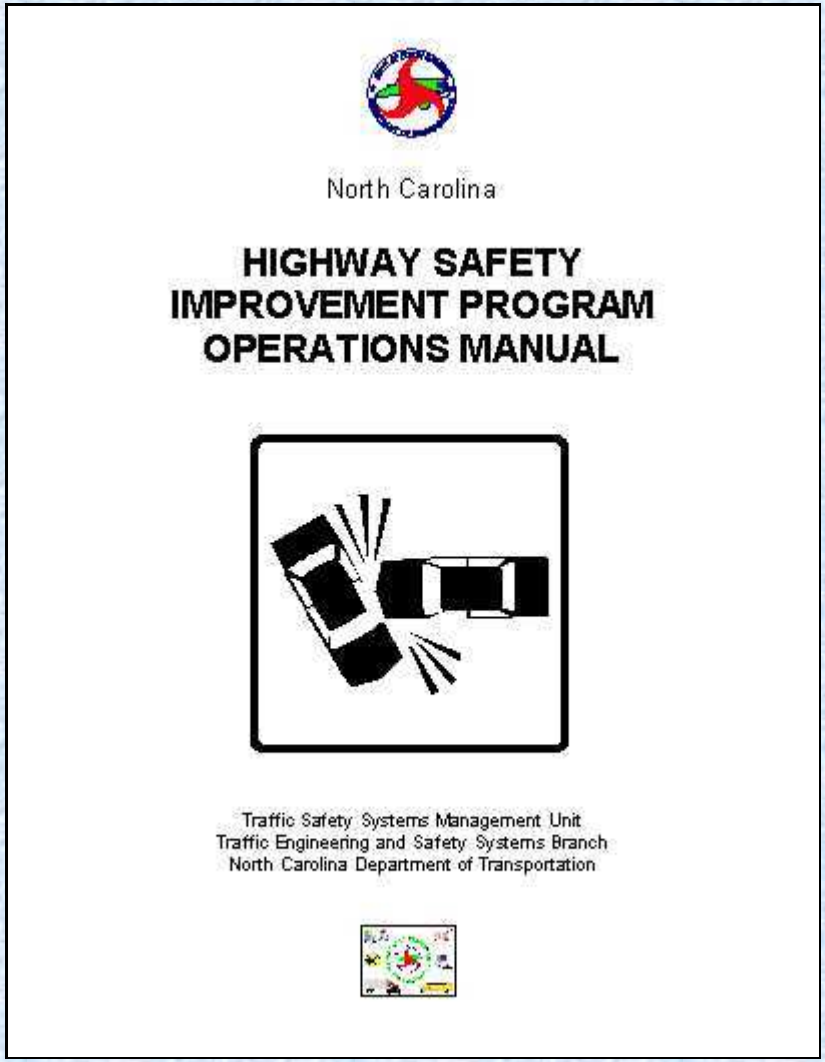
Network Screening:

- Safety warrants are used to identify potentially hazardous (PH) locations
- Criteria for safety warrants is based on the crash data
- PH Locations are prioritized by a weighting factor:
  f (crash frequency, severity, percentage of target crashes)



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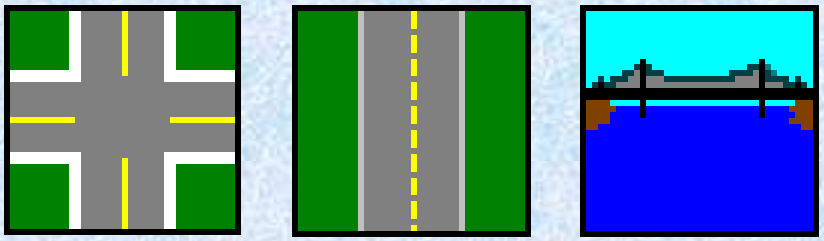
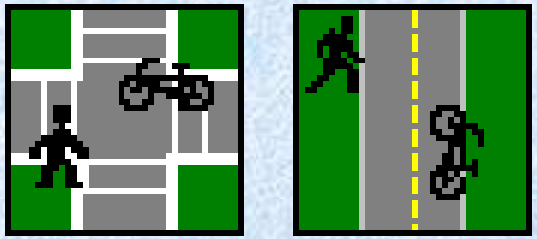
2005 SAFETY WARRANTS





Intersection Warrants:

- I-1: Frontal Impact
- I-2: Last Year Increase
- I-3: Severity Index
- I-4: Night Location without Streetlights
- I-5: 10-Year Chronic Pattern (Rear End or Crossing)

Section Warrants:

- S-1: Run Off Road during Wet Road Condition
- S-2: Run Off Road
- S-3: Wet Road Condition
- S-4: Non-Intersection Night Location without Streetlights

Bridge Warrant:

Bicycle and Pedestrian Intersection/Section Warrants:

- Last 3 Years, Darkness with Streetlights, Alcohol Involvement and Chronic Locations

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Safety Warrants (intersection example):

- Warrant I-1: ("Frontal Impact Crashes" - Angle, left turn, right turn and head-on crashes)
- Time Frame: Most recent 5 years of available crash data.
- Criteria: Intersections with a minimum of 25 total crashes AND a minimum of 50% of the total crashes were frontal impact AND a minimum of 25% of the total crashes occurred in the last 2 years.
- Reason for Warrant: These types of crashes tend to have a higher than normal severity and therefore the intent of this warrant is to determine which locations can be investigated and corrected in order to reduce the frequency and/or severity of frontal impact crashes.

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Safety Warrants (section example):

- Warrant S-2: “Run Off Road Crashes”
- Time Frame: Most recent 5 years of available crash data.
- Reason for Warrant: There are proven countermeasures that can be applied to identified locations that have experienced this crash type.

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Safety Warrants (section example):

- Warrant S-2: "Run Off Road Crashes"
- Criteria:
  - Part I, II - Crash Frequency and Crash Density

Facility Type	Minimum Total Crashes	Minimum Crashes/ Mile Rate
Interstate	30	60
US Route	20	40
NC Route	20	40
SR Route	15	30
City Street	20	40

  - Part III - Minimum of 60% of the total crashes were run off road crashes

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Sliding Window Application:

- Can precisely identify the warranted section
- Divides highway section in 0.1-mile segments
  - Crash data is calculated for each segment
- Sliding Window can be moved by 0.1-mile increments along the highway section
- Size of the Sliding Window can be increased by 0.1-mile increments

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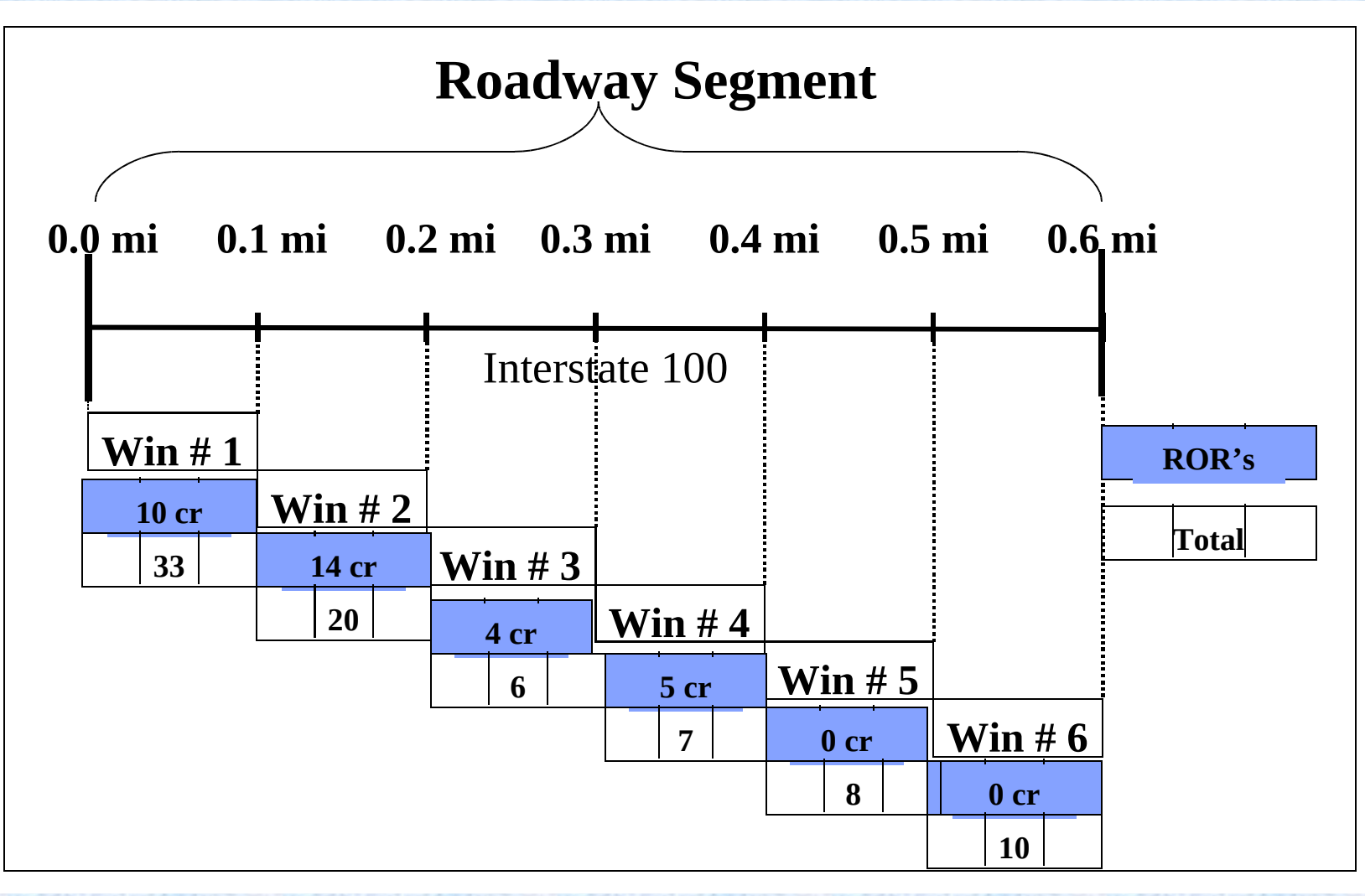
Sliding Window Example



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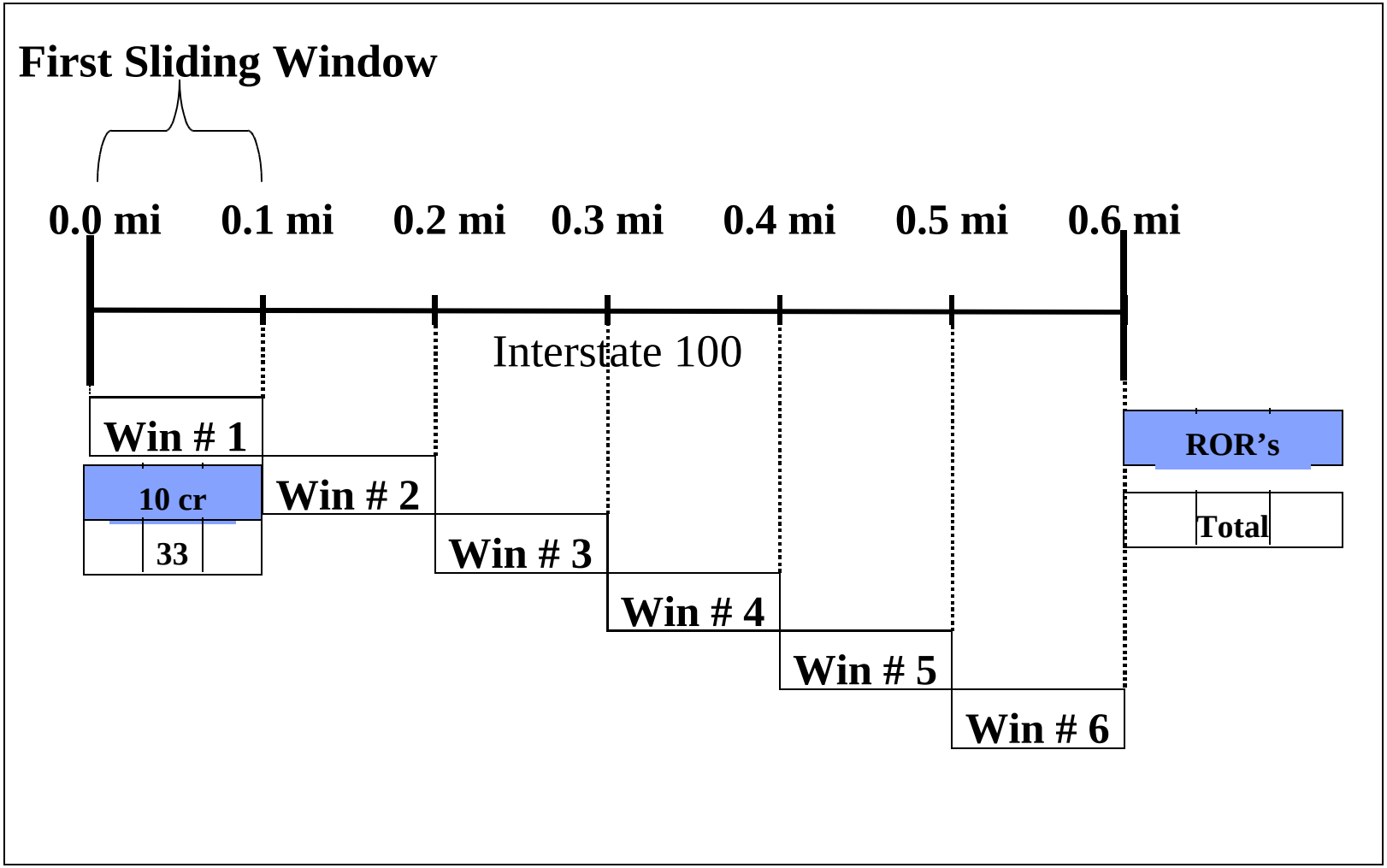
Sliding Window Example



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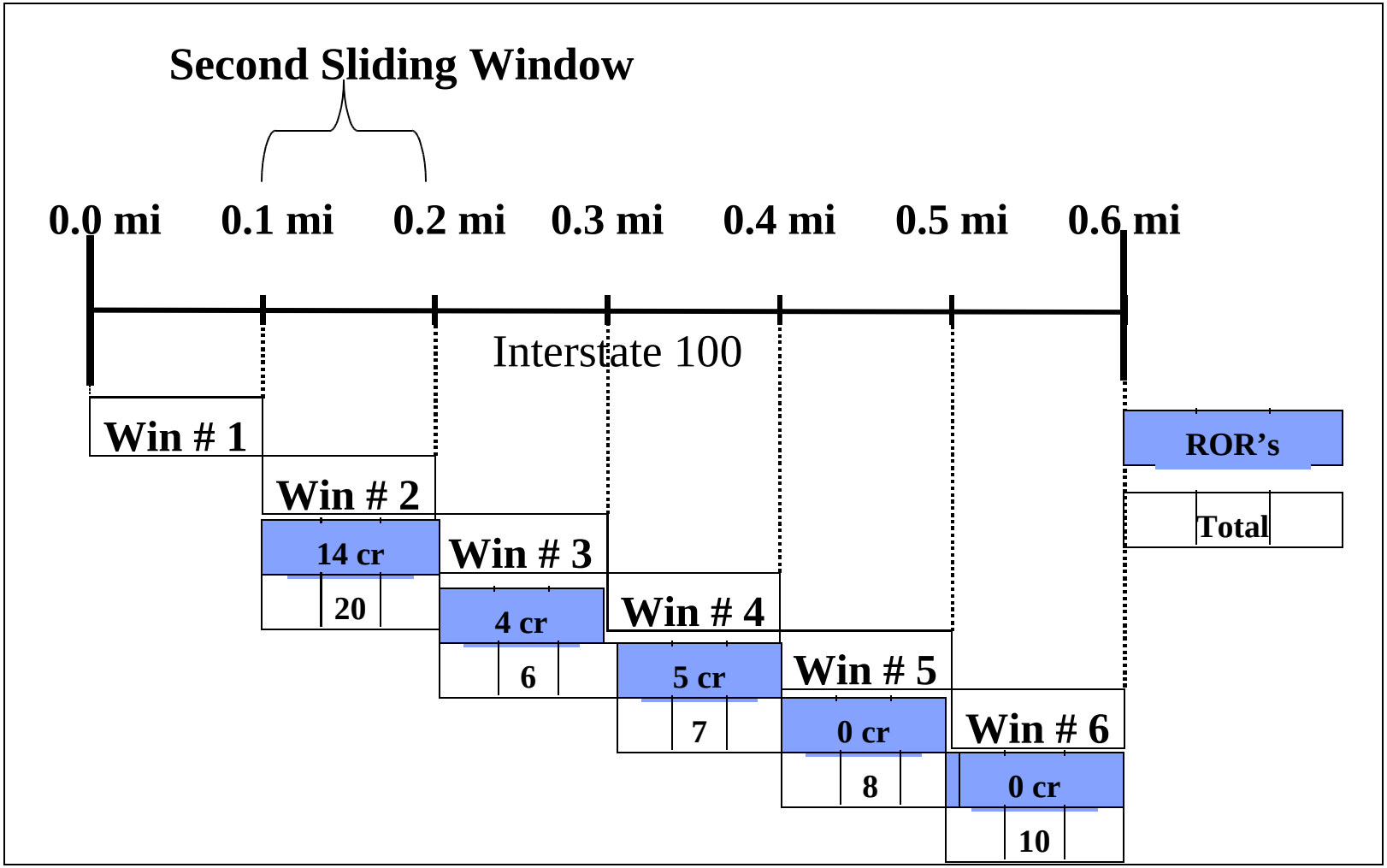
Sliding Window Example



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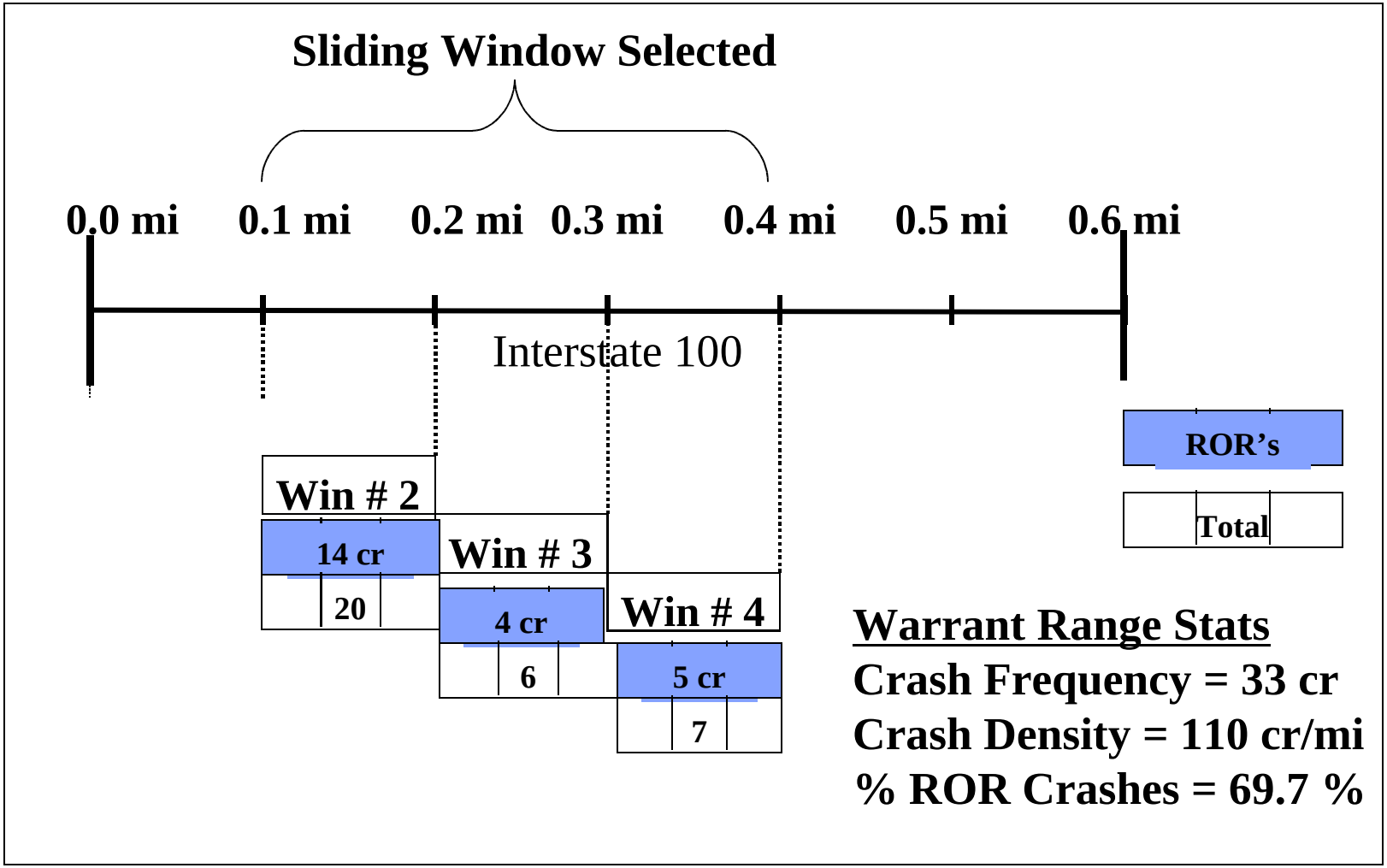
Sliding Window Example



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Exclusion Process:

- Current or Recent Safety Investigation
- Recently Installed Countermeasures
- Programmed Projects

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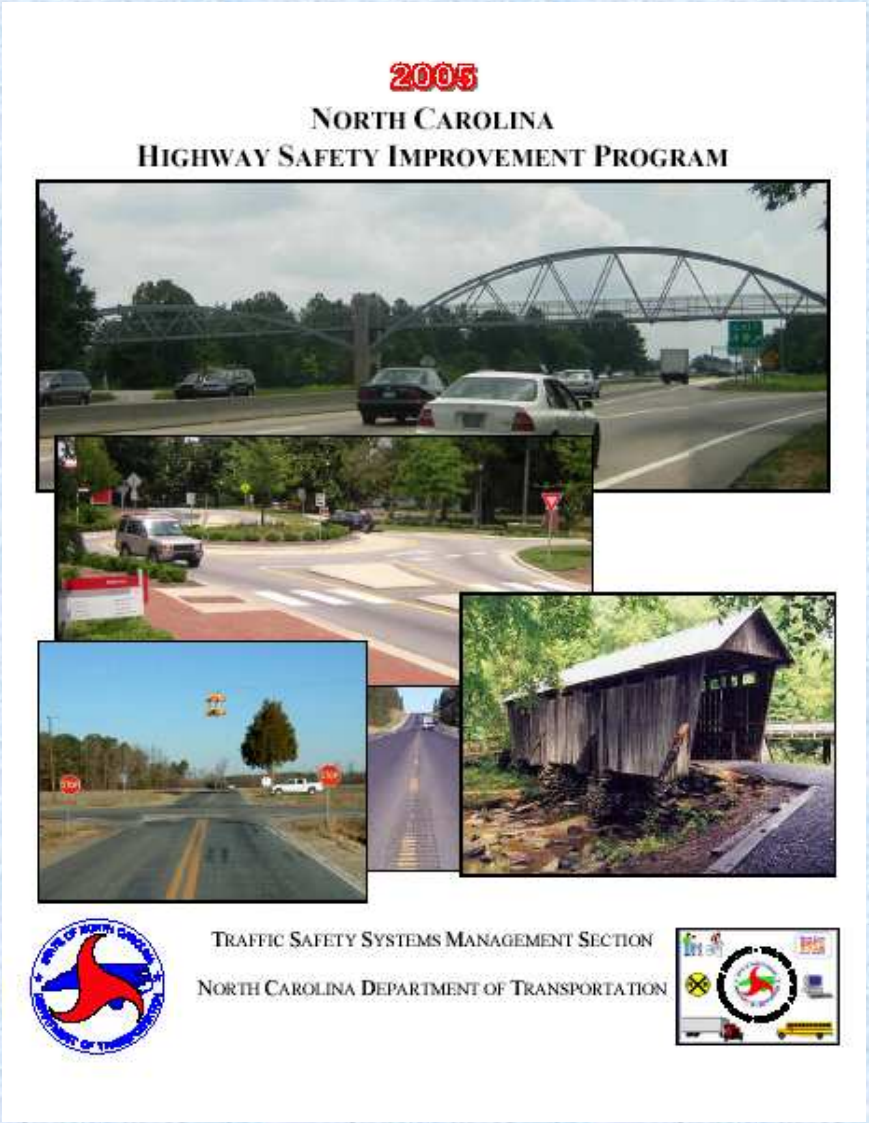
Current HSIP (2005 Cycle):

- 2,563 potentially hazardous intersection locations
- 416 potentially hazardous section locations
- 187 potentially hazardous bridge locations
- 125 potentially hazardous bike/ped intersections
- 174 potentially hazardous bike/ped sections



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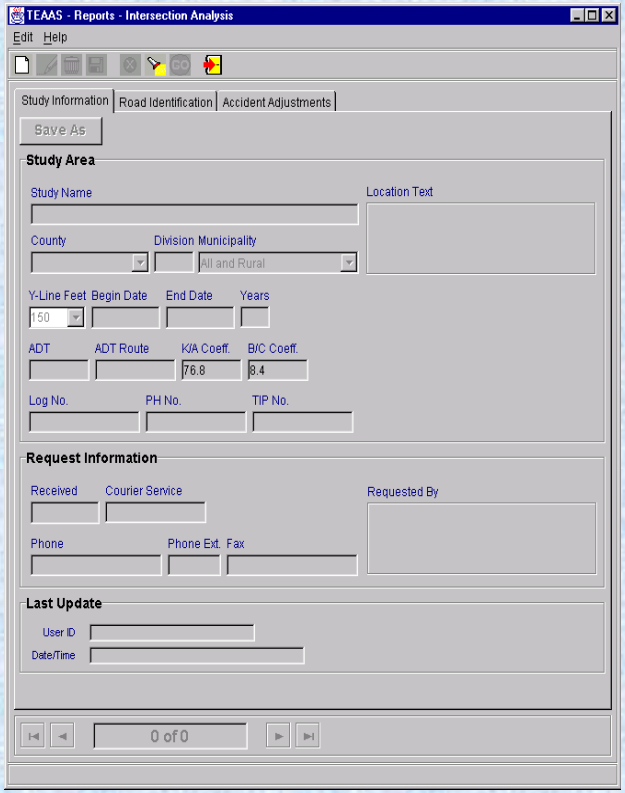
The HSIP Group's Role:

- Perform studies of high ranked PH locations
- Perform warrant analysis
- Develop collision diagrams
- Identify major crash patterns and trends



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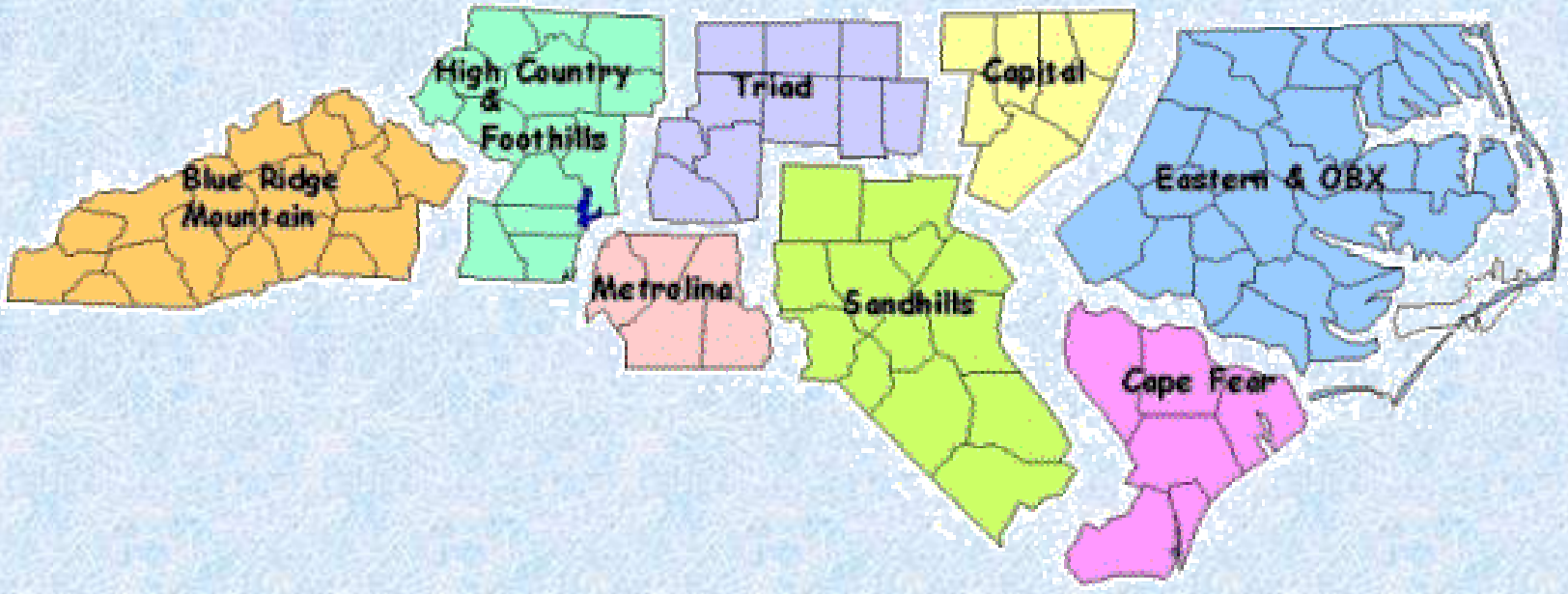
Regional Engineer's Role:

- Review crash data
- Study existing roadway facility and traffic operations
- Identify, assess, and select possible countermeasures
- Determine funding sources and submit recommendations



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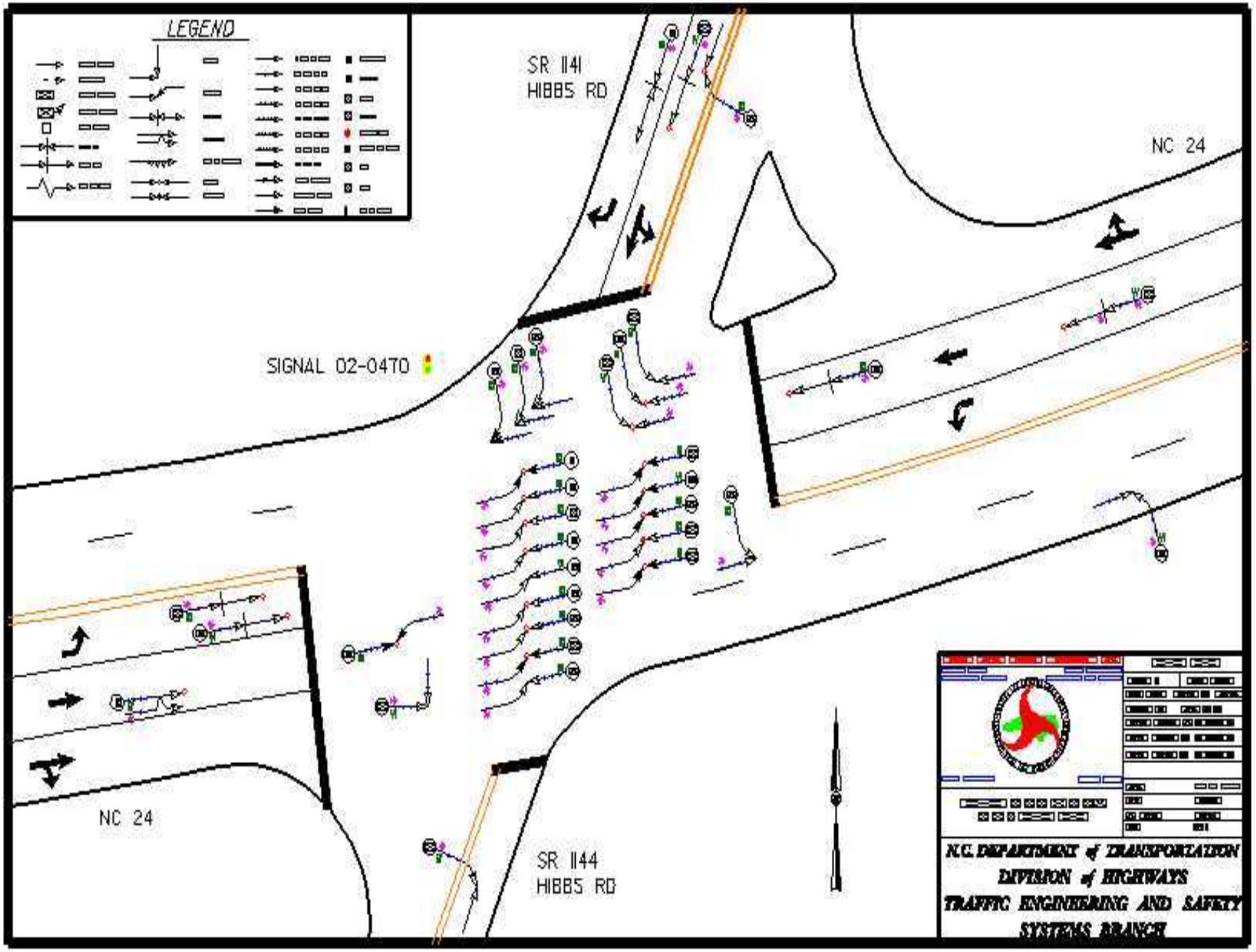
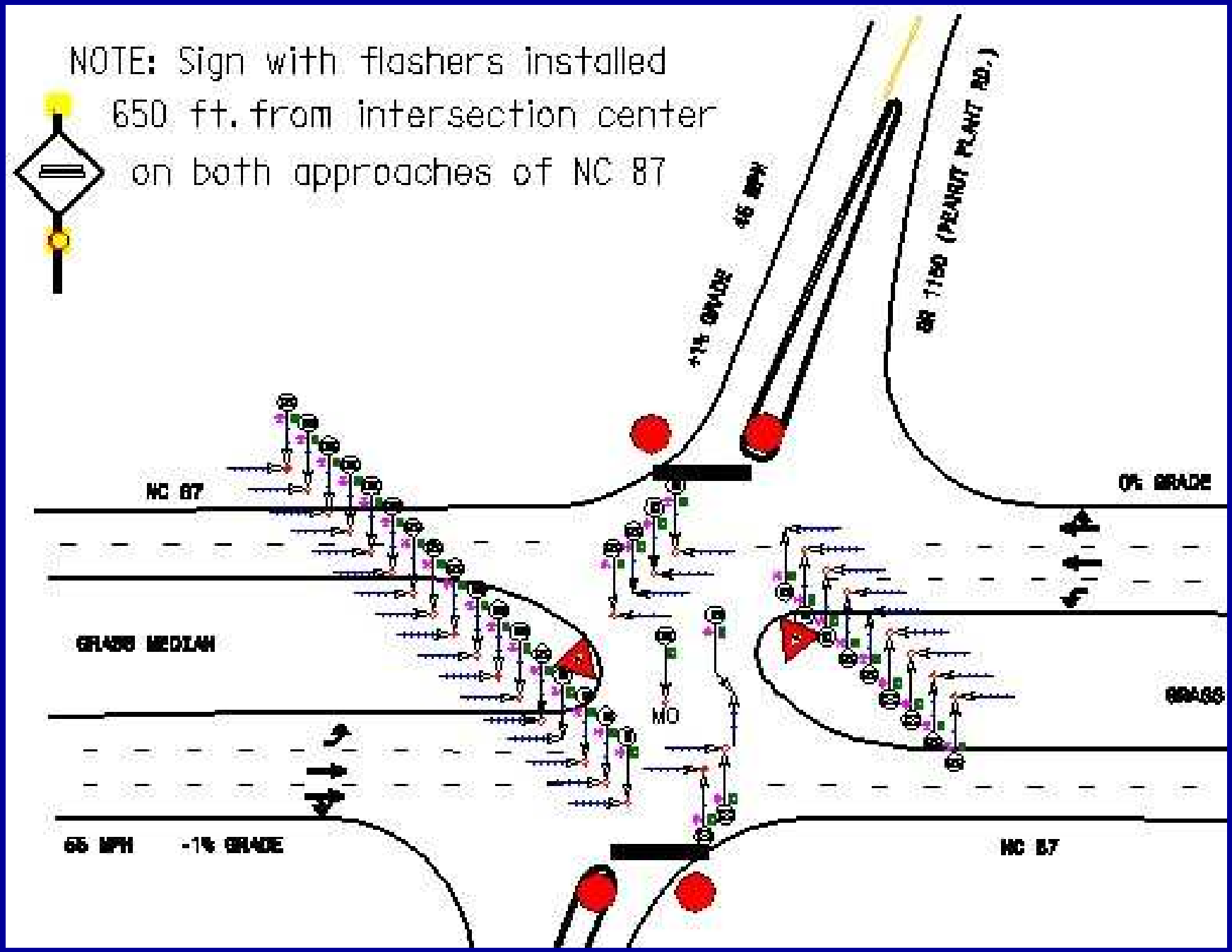
PH Location Examples

- PH# 15I00026 - NC 24 @ SR 1141/1144 (Carteret Co.)
- PH# 08I00021 - NC 87 @ SR 1150 (Bladen Co.)
- PH# 96S00009 - SR 1143 near SR 1144 (Wilkes Co.)
- PH# 48B00019 - Bridge No. 3 on SR 2362 (Iredell Co.)

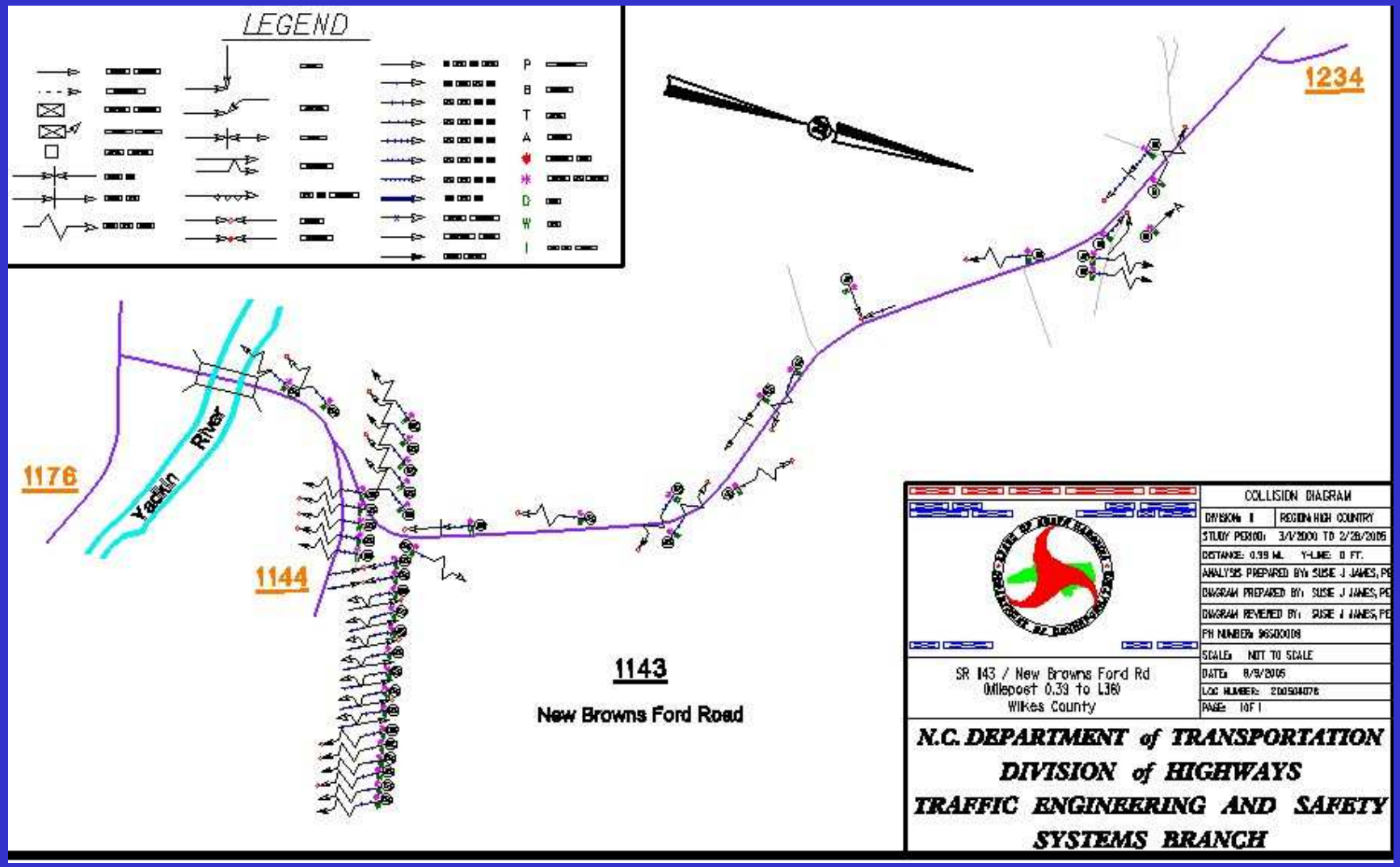

LEGEND
SR 1141
HIBBS RD
NC 24
SIGNAL 02-0470
NC 24
SR 1144
HIBBS RD
N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
TRAFFIC ENGINEERING AND SAFETY
SYSTEMS BRANCH

Stopped at Light on Eastbound NC 24

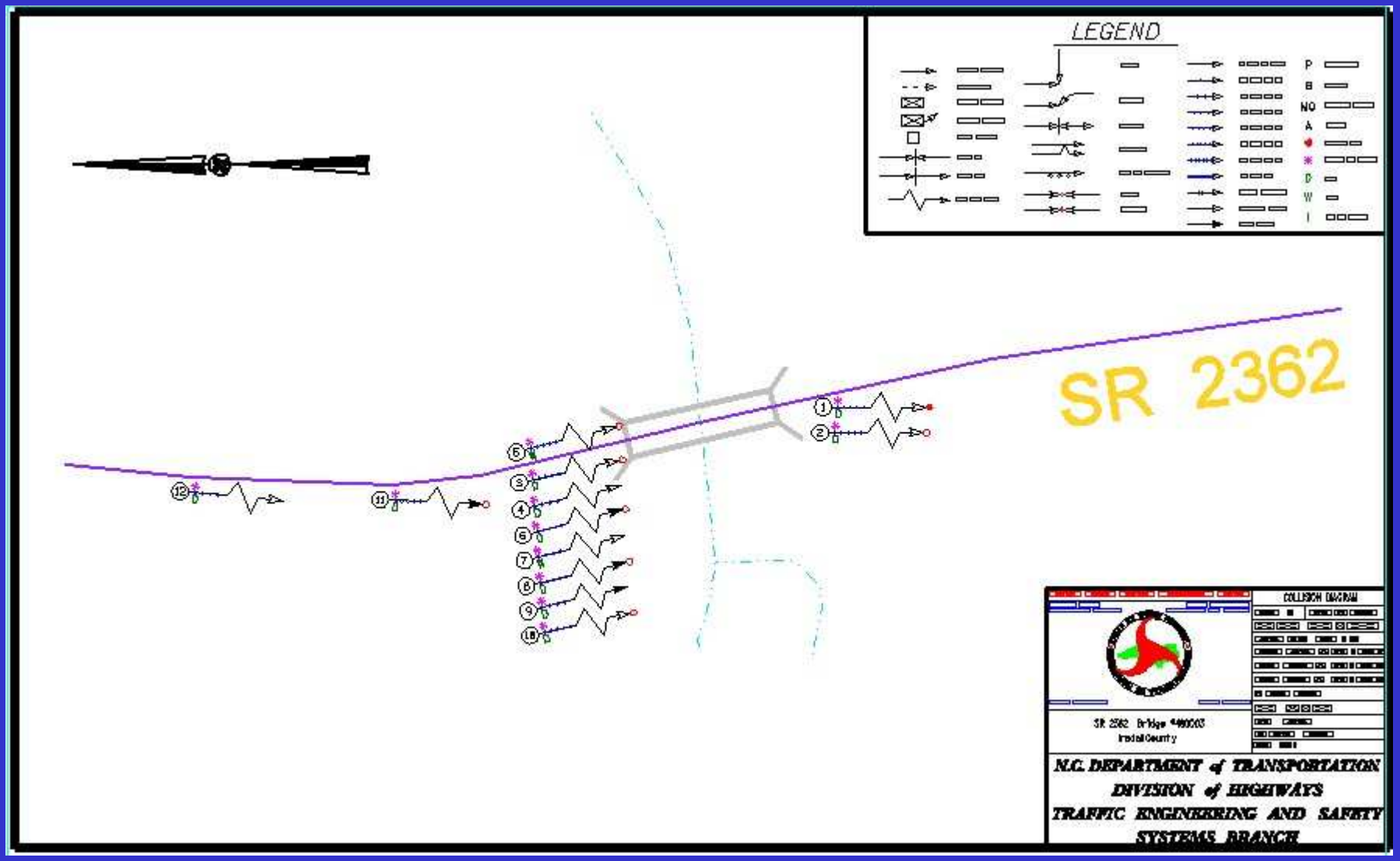

NOTE: Sign with flashers installed
650 ft. from intersection center
on both approaches of NC 87
NC 87
0% GRADE
GRADED MEDIAN
65 MPH
-1% GRADE
NC 87

HSIP:08I00030

Stopped at Intersection on Southbound SR 1145


LEGEND
P
B
T
A
D
W
I
1234
1176
Yadkin River
1144
1143
New Browns Ford Road
COLLISION DIAGRAM
DIVISION 11
REGION HIGH COUNTRY
STUDY PERIOD: 3/1/2000 TO 2/28/2005
DISTANCE: 0.39 MI. Y-LINE: 0 FT.
ANALYSIS PREPARED BY: SUSIE J JAMES, PE
DIAGRAM PREPARED BY: SUSIE J JAMES, PE
DIAGRAM REVIEWED BY: SUSIE J JAMES, PE
PH NUMBER: 96S00108
SCALE: NOT TO SCALE
DATE: 8/9/2005
LOG NUMBER: 20050478
PAGE: 1OF 1
SR 143 / New Browns Ford Rd
(Milepost 0.39 to L36)
Wilkes County
N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
TRAFFIC ENGINEERING AND SAFETY
SYSTEMS BRANCH

Southbound view of SR 1143 near Embankment


LEGEND
P
B
NO
A
D
W
I
SR 2362
1
2
3
4
5
6
7
8
9
10
11
12
COLLISION DIAGRAM
N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
TRAFFIC ENGINEERING AND SAFETY
SYSTEMS BRANCH

HSIP 48B00019

Southbound SR 2362 near Bridge

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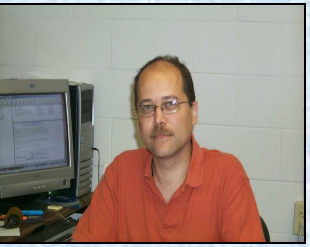

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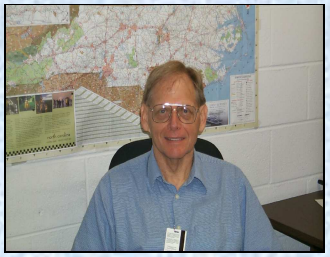

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Questions?